

APPLICATION FILED OCT. 21, 1912.

2 SHEETS—SHEET 1.

Fig. 1.



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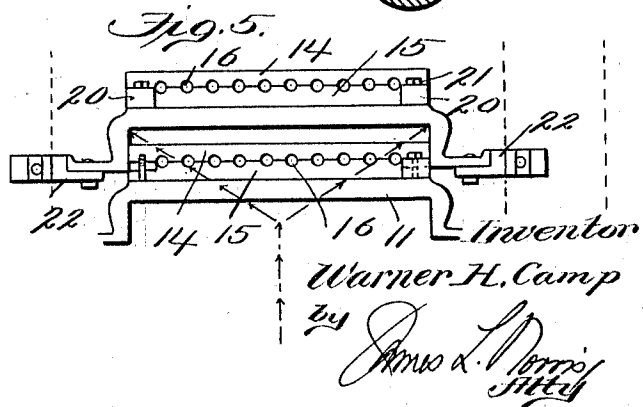
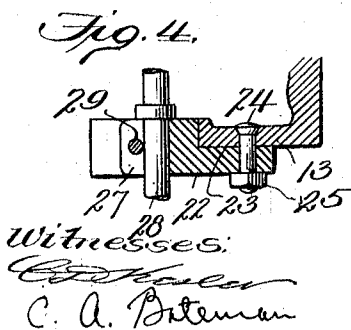
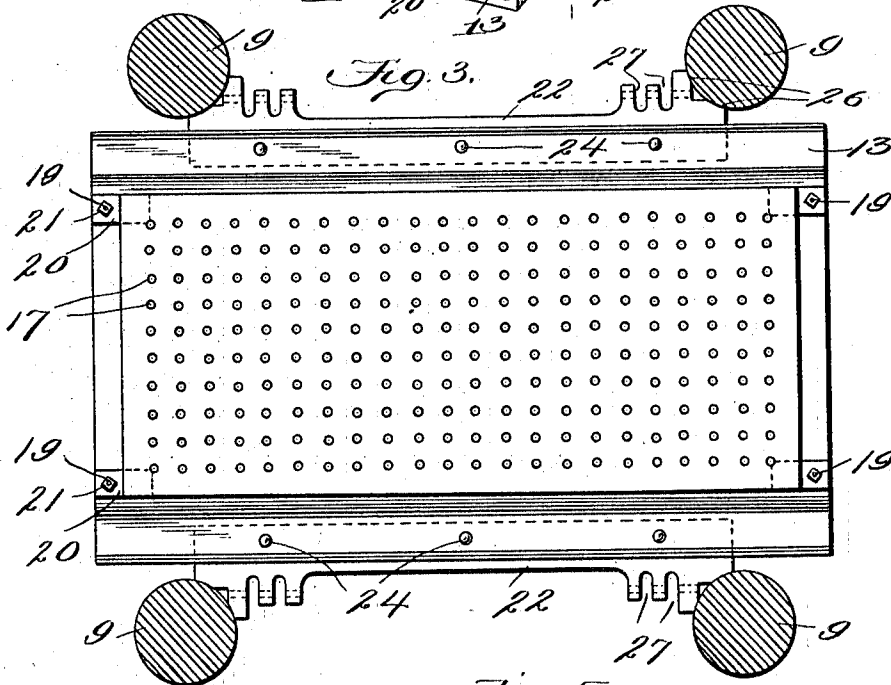
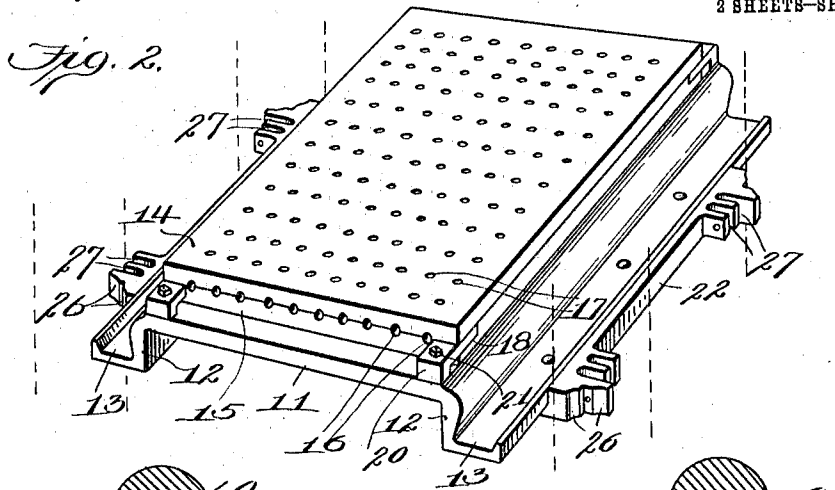
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HYDRAULIC PRESS.
APPLICATION FILED OCT. 21, 1912.

1,059,274.

Patented Apr. 15, 1913.

3 SHEETS-SHEET 2.



UNITED STATES PATENT OFFICE.

WARNER H. CAMP, OF ATLANTA, GEORGIA.

HYDRAULIC PRESS.

1,059,274.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed October 21, 1912. Serial No. 727,030.

To all whom it may concern:

Be it known that I, WARNER H. CAMP, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented new and useful Improvements in Hydraulic Presses, of which the following is a specification.

My present invention relates to improvements in presses and more especially to those of the type used for expressing oil from cotton seed, and the primary object of the invention is to provide a press box and cooperating guides of improved construction which are capable of sustaining the outward thrust due to the tendency of the cotton seed cake under compression to spread and squeeze outwardly, the guides being connected to the flanges which project outwardly from the lower edges of the sides of the press box and hence at points below the surface thereof which sustains the axial pressure of the cake, and the guides abutting against the posts of the press, spreading and consequently distortion or breakage of the sides of the press box being avoided and thus enabling higher compression and more thorough extraction to be attained.

Another object of the invention is to provide the press box with guides having lugs shaped and arranged to fit and abut against the inner diagonally opposed sides of the posts of the press whereby not only do the press posts sustain the outward thrust which tends to spread and thereby distort or break the sides of the press box, but the location and arrangement of the lugs on the guides relatively to the posts of the press is such that the guides will not bind or become wedged against the post although the guides may become tilted.

Further objects of the invention are to provide means for detachably securing the press plates to the press box whereby the plates may be quickly and easily removed and replaced, and to provide means for detachably connecting the press box to its guides whereby a press box may be quickly and easily removed and replaced without the necessity of removing the guides or disturbing the remaining press boxes.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the

novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawing:—Figure 1 is a perspective view of a press equipped with press boxes and guides constructed in accordance with the present invention; Fig. 2 is a detail perspective view of one of the improved press boxes showing the guides and the press plate attached thereto; Fig. 3 is a top plan view of one of the press boxes with its press plate and guides and showing the cooperative relation between the guides and the posts of the press; Fig. 4 is a detail sectional view showing means for detachably connecting the press box to its guides and for removably securing the press plate to the press box; and Fig. 5 shows two of the press boxes in cooperative relation and illustrating diagrammatically the stresses imposed on the sides of the press box while the material therein is under compression.

Similar parts are designated by the same reference characters in the several views.

The present invention is applicable generally to presses of various types, although it is especially applicable to presses of the type employed in the expressing of oil from cotton seed.

The preferred embodiment of the invention is shown in the accompanying drawing and will be hereinafter described in detail, but it is to be understood that the invention is not restricted to the particular construction shown, as equivalent constructions may be used and are included within the terms of the claims at the end of the specification.

The press shown in the present instance comprises, as usual, a hydraulic cylinder 5, a table 6 to receive and collect the expressed oil, a cap 7, a ram or plunger 8 which operates in the hydraulic cylinder 5 and is operative by the hydraulic pressure in said cylinder, and the posts 9 which rigidly connect the cap 7 and the hydraulic cylinder. Four posts are usually employed and they accommodate the press boxes 10 in the space between them. Any suitable number of press boxes may be used and they may be of duplicate construction. According to the present invention, each press box embodies a head or table 11 which is preferably flat at its upper and lower surfaces, sides 12 de-

pend or extend downwardly from the opposite longitudinal edges of the table or head 11, and flanges 13 extend outwardly from the lower edges of the sides 12. The top surface of the table or head 11 of each press box is adapted to receive a press plate, each press plate in the present instance being composed of a pair of complemental sections 14 and 15 which are riveted together in any suitable way and are formed with longitudinally extending channels or bores 16 which receive the expressed oil from the vertical bores 17 which extend downwardly from the top surface of the upper section 14. In order to enable the press plates to be quickly and easily removed and replaced relatively to the press boxes, each press plate is removably secured to its respective press box, each corner of the press plate in the present instance being formed with a recess 18, a stud 19 is fastened in each corresponding corner of the press box, and a clamping member 20 is provided at each corner of the press box, on end of the clamping member being adapted to enter the recess in the respective corner of the press plate, and a nut 21 on the stud serves to draw the clamping member down and thus secure the press plate firmly on the press box. These studs and clamping members are accommodated on the ends of the press box which are extended beyond the ends of the press plate. The press plate on one press box fits in the space between the sides 12 of the press box immediately above it, and by arranging the clamping members at the ends of the press box and beyond the respective ends of the press plate, these clamping members do not interfere with the entrance of each press plate into the press box immediately above it.

In practice, a cake of the cotton seed or other material to be treated is introduced between the top of each press plate, the head 11, and the sides 12 of the press box next above it, and when the ram or plunger of the press operates in the usual way, the vertical or axial compression of the cake of material tends to spread the cake of material laterally or horizontally, thereby producing a considerable outward pressure against the sides 12 of each press box. In using press boxes as heretofore constructed, this outward thrust upon the sides of the press box has resulted in distorting or breaking the press box and thus rendering the press box unfit for further use, it being essential that each press plate should fit accurately between the sides of the press box next above it in order to properly confine the cake when subjected to pressure. The press box provided by the present invention is capable of withstanding the lateral thrust imposed upon it due to the spreading tendency of the cake or material under pressure,

the lateral thrust upon the sides of the press box being sustained by the rigid posts of the press through the medium of guides which are attached in a novel way to the press box and cooperate with the posts. According to the present invention, a pair of guides 22 are fitted to the out-turned longitudinally extending flanges 13 of the press box, the guides being preferably connected to the press box by devices which enable any plate to be readily disconnected from its guides and removed from the press without disturbing the remaining press boxes. In the present instance, each guide is formed with a longitudinal channel 23 which engages the outer edge and a portion of the bottom of the respective out-turned flange 13, and a suitable number of rivets 24 may be secured to the out-turned flanges 13 and equipped with nuts 25 to clamp the guides to the respective flanges of the press box. The guides abut against the posts of the press to sustain or withstand the spreading tendency of the sides of the press box, and in the present instance, these guides cooperate with the posts of the press in such a manner that they will not bind or become wedged thereon irrespective of whether the press boxes become tilted. To obtain these results, the ends of the guides are formed with seats 26 which are shaped to conform to the curvature of the posts, and these seats are adapted to abut against the inner diagonally opposed sides of the posts, the engagement of these seats with the inner sides of the posts causing the rigid posts to resist outward expansion or spreading tendency of the sides of the press box, and obviously, these seats will not become wedged on the posts irrespective of whether the press box becomes tilted either transversely or longitudinally. The outer sides of the guides are provided with slots 27 to receive the bolts 28 which connect the adjacent press boxes and retain them in proper relation particularly when they are slack, and a pin 29 may be used to retain the bolts in position. These bolts may be easily reached when necessary, the open slots at the outer edges of the guides enabling them to be readily removed and replaced. By using countersunk rivets 24 to connect the guides to the out-turned flanges 13 of the press box, the channels at the upper sides of these flanges are unobstructed and hence may be readily scraped or otherwise cleaned of accumulations.

What I claim is:—

1. A press box having a support for a press plate, sides depending from the support, and abutments connected to the lower portions of said sides to sustain forces tending to spread them outwardly.

2. A press box having a support for a press plate, sides extending downwardly

from opposite edges thereof and adapted to confine between them the material to be treated, and means connected to the lower edges of said sides for sustaining the outward forces exerted on said sides by the compression of said material.

3. A press box having a support for a press plate, sides extending downwardly from the support, and out-turned flanges at the lower edges of said sides.

4. A press box having a support for a press plate, sides extending downwardly therefrom, out-turned flanges connected to the lower portions of said sides, and guides attached to said flanges and having abutment seats arranged to cooperate with the inner diagonally opposed sides of the posts of a press.

5. A press box having a support for a press plate, sides extending downwardly therefrom, out-turned flanges connected to the lower portions of said sides, guides fitting the respective flanges, and means for detachably securing the guides to said flanges.

6. The combination of a press box, a press plate resting thereon, and devices cooperative with the corners of the press plate for

removably securing the same to the press box.

7. The combination of a press having posts, and a set of press boxes, each having vertical sides with flanges extending outwardly from their free edges, said flanges being provided with abutment seats cooperative with the inner diagonally opposed sides of said posts.

8. The combination of a press having posts, a set of press boxes, each box having vertical sides provided with flanges extending outwardly from their free edges, guides attached to the outwardly extending flanges of the boxes and having abutment seats cooperative with the posts of the press, the guides having open slots in their outer edges, bolts cooperative with the slots of adjacent guides, and devices for retaining the bolts in said slots.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WARNER H. CAMP.

Witnesses:

H. R. EICHBERG,
T. H. CAWHERN.